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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,933	12/08/2003	Shunpei Yamazaki	0756-7225	9655

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EXAMINER

ZARNEKE, DAVID A

ART UNIT PAPER NUMBER

2891

DATE MAILED: 09/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/728,933	Applicant(s) YAMAZAKI ET AL.	
	Examiner David A. Zarneke	Art Unit 2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 3,4,6 and 7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5 and 8-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/5/04 & 12/8/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Figure 9A, claims 1, 5, 8-17 in the reply filed on 7/11/05 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 5 and 8-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimoda et al., US Patent 6,372,608, in view of Ogawa et al., JP 04-124813.

Shimoda (figures 24-34) teaches a method for manufacturing a semiconductor apparatus comprising the steps of:

- forming a semiconductor film [143] over a first substrate [100];

- crystallizing the semiconductor film by irradiating the semiconductor film with a laser to form a crystallized semiconductor film (figure 24 & 38, 24+);

- forming a semiconductor device using the crystallized semiconductor film (figures 25-30);

- bonding a second substrate [180] over the semiconductor device; and

- removing the first substrate from the semiconductor device (figure 33).

Shimoda fails to teach the crystallizing is performed by irradiating using overlapped beam spots of a first laser light and a second laser light.

Ogawa et al. discloses a method of manufacturing a semiconductor device wherein the device is irradiated with a continuous wave laser and a pulsed laser (the embodiment detailed starting on page 5 of the translation supplied by applicant).

It would have been obvious to one of ordinary skill in the art at the time of

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the invention to use the laser technique of Ogawa in the invention of Shimoda because Ogawa teaches a high-quality crystalline thin film having good reproducibility is produced by this process (the section labeled "Technical Field to which the Invention pertains" on page 3 of the translation supplied by applicant) as a result of the fact that peeling and surface irregularities are reduced (the section labeled "Problem to be solved by the Invention" on page 3 of the translation supplied by applicant).

Shimoda, which teaches bonding the device to a substrate and implies removing the second substrate because it is a transfer substrate and serves no purpose once the device is attached to another substrate, fails to teach the substrate to which the device is bonded is an interposer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use an interposer as the substrate to which the device is bonded because interposers are conventional, well known in the art substrates that devices are bonded. The use of conventional materials to perform there known functions in a conventional process is obvious (MPEP 2144.07).

Regarding claim 2, it would have been obvious to one of ordinary skill in the art at the time of the invention to electrically connect the interposer and the device because this is obviously the next step and therefore a conventional, well known in the art step used in the packaging of devices. The device would be useless if it wasn't electrically attached to the interposer. The use of conventional materials to perform there known functions in a conventional process is obvious (MPEP 2144.07).

With respect to claim 5, Shimoda fails to teach cutting off a semiconductor device from the plurality of semiconductor devices by dicing the second substrate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use dice the devices from a wafer because dicing is conventional, and because the mere duplication of parts has no patentable significance unless a new and unexpected result is produced (In re Harza, 124 USPQ 378 (CCPA 1960)).

As to claim 8, Shimoda teaches the separation layer [120] and the interlayer [142] that are formed between the first substrate and the semiconductor film may be formed of metals (12, 44+ & 13, 28+), metal oxides (13, 14+) and insulators (12, 14+ & 13, 24+).

In re claim 9, Ogawa teaches the first laser light is a pulsed laser light and the second laser light is a CW laser light.

In re claim 10, it would have been obvious to one ordinary skill in the art at the time of the invention to optimize the absorbent coefficient of the first laser light through routine experimentation (MPEP 2144.05).

Regarding claims 11 and 12, it would have been obvious to one ordinary skill in the art at the time of the invention to crystallize the metal oxide film by heat-treating because this is a conventional, well known in the art technique. The use of conventional techniques to perform there known functions in a conventional process is obvious (MPEP 2144.07).

With respect to claim 13, it would have been obvious to one ordinary skill in the art at the time of the invention to form the metal oxide film by oxidizing a surface of the

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metal film because this is a conventional, well known in the art technique. The use of conventional techniques to perform there known functions in a conventional process is obvious (MPEP 2144.07).

As to claim 14, it would have been obvious to one ordinary skill in the art at the time of the invention to optimize the first laser light to be a second harmonic laser light through routine experimentation (MPEP 2144.05).

In re claim 15, it would have been obvious to one ordinary skill in the art at the time of the invention to optimize the second laser light to be a fundamental wave laser light through routine experimentation (MPEP 2144.05).

Regarding claim 16, Ogawa teaches the beam spots of the first laser light and the second laser light are moved relatively to the semiconductor film, and the semiconductor device is formed so as to fit within a width of a beam spot of the second laser light in a vertical direction to a moving direction of the beam spots of the first laser light and the second laser light.

With respect to claim 17, it would have been obvious to one ordinary skill in the art at the time of the invention to optimize the width of the beam spot of the second laser light through routine experimentation (MPEP 2144.05).

Conclusion

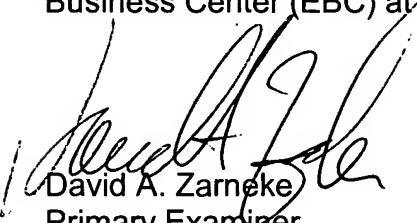
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited but not relied upon teaches the state of the art.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Zarneke whose telephone number is (571)-272-1937. The examiner can normally be reached on M-Th 7:30 AM-6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Baumeister can be reached on (571)-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David A. Zarneke
Primary Examiner
September 26, 2005